

Lesser Grey Shrike, the Red-breasted Flycatcher, the Black-headed, Rustic, and Ortolan Buntings, the Great White Heron (Scotland), the Ruddy Sheld-Duck, the King Eider, and the Harlequin Duck. On the other hand, the following species are omitted, with the exception of brief notices (not always under the corresponding genus):—the Gold-vented Thrush, the Purple Martin, the Parrot and American White-winged Crossbills, the Red-winged Starling, the Belted Kingfisher, the Yellow-billed Cuckoo, the Swallow-tailed Kite, the Canada, Spur-winged, and Egyptian Geese, the Polish Swan, and the Passenger Pigeon. The only vignettes retained are those of *Anthus rufestris*, *Neophron percnopterus* (juv.), the head and foot of the Nightjar, and the foot and breast-bone of the Swift.

Stronger proof is adduced of the specific identity of the various Dippers, a young Bittern in the down is recorded from Norfolk and a specimen of *Anser erythropus* from Northumberland, the nesting of the Brambling and the Pintail in Scotland on one occasion, and of the Snow-Bunting on two, is substantiated, the Kestrel is stated to have built on the ground and Spoonbills on trees at Fulham, and the recent irruption of the Sand-Grouse is duly chronicled; while critical distinctions between the species are not unfrequently italicized, and new details abound with regard to food, habits, interbreeding, number of broods or eggs, and time of nesting. The distribution of many birds in Britain is also considerably at variance with the older records, notably that of the Marsh-Harrier in Scotland.

As errors we may mention the omission of measurements in the Wall-Creeper and some confusion of language in respect to the Cuckoo's foster-parents, while we are sorry to see the American *Plectrophenax* substituted for *Plectrophanes*.

PROCEEDINGS OF LEARNED SOCIETIES.

GEOLOGICAL SOCIETY.

December 19, 1888.—W. T. Blanford, LL.D., F.R.S.,
President, in the Chair.

The following communications were read:—

1. “*Trigonocrinus*, a new Genus of Crinoidea from the ‘Weisser Jura’ of Bavaria, with description of a new species, *T. liratus*; Appendix I. Sudden deviations from normal symmetry in Neocrinoidea; and Appendix II. *Marsupites testudinarius*, Schl., sp.”
By F. A. Bather, Esq., B.A., F.G.S.

This genus is proposed on the evidence of two calyces in the British Museum (Natural History) which were found among specimens of *Eugeniocrinus* from Streitberg. The species of *Eugeniocrinus*, *Phyllocrinus*, and *Trigonocrinus* may be arranged in a series which is apparently one of evolution. The present genus is there-

fore to be placed with the Eugeniocrinidæ, although its characters are not those of the family as heretofore defined. This is seen from the following diagnosis:—

Trigonocrinus, gen. nov.—Calyx roughly triangular or trilobate in section. Basals 4, but one so atrophied as to be almost invisible; all fused into a basal ring. First radials 4; the two on either side of the smallest basal half the size of the others, thus maintaining the triangular symmetry; all closely united, with each suture-line in a groove. Processes of radials well developed, forming spines homologous with the petals of *Phyllocrinus*; except the adjacent processes of the smaller radials, which only form a minute ridge. Articular surface of radials curved gently inwards and upwards; muscular impressions indistinct or absent; no articular ridge; no canal-aperture. Arms unknown: ? represented by fleshy appendages. Calyceal cavity contained in first radials; with small round ventral aperture, surrounded by a rim, which is the only relic of a muscular attachment. Stem unknown.

The two calyces belong to the same species, viz. *T. tiratus*, sp. nov. —Calyx rather more elongate than in the known species of *Phyllocrinus*; basals ornamented with minute granules; radials ornamented with similar granules run into curved ridges, which, owing to their differing intensity, give an imbricated appearance; spines triangular in section, with the base of the triangle directed inwards, the apex outwards, the angles often rounded.

The differentiation of *Trigonocrinus* from the central Eugeniocrinid type has been effected on the one hand in accordance with the principles of "Degeneration," "Reversion," and "Use and Disuse"; while, on the other hand, it exemplifies certain methods of change in organic forms, which may be referred to the categories of (1) Sport, (2) Hypertrophy and Atrophy, (3) Fusion and Fission. Thus considered it is of unique interest among Crinoidea. An examination of the variations in symmetry presented by the Echinodermata suggests the conclusion that the Pentamerous type was originally evolved from another system, or at least that it was selected from among other variations, that it has survived, and that it has been kept true, as being the fittest.

Appendix I. Sudden deviations from normal symmetry in Neocrinoidea.

A collection of instances from previous authors, with a few additions, the whole illustrating the latter portion of the paper.

Appendix II. On *Marsupites testudinarius*, von Schlottheim, sp.

A synonymy of the genus *Marsupites*; it contains but one known species, and all other names must yield to this one.

2. "On *Archæocyathus*, Billings, and on other Genera allied thereto or associated therewith from the Cambrian Strata of North America, Spain, Sardinia, and Scotland." By Dr. G. J. Hinde, F.G.S.

A revision of the type specimens of the three species included by Mr. Billings in the genus *Archæocyathus* shows that each of the

species represents a distinct genus. *Archæocyathus profundus*, having been selected by Mr. Billings in 1865 as the typical species, was retained as such, and the characters of the genus, as shown in this species were defined; *Arch. atlanticus*, Bill., was made the type of a new genus, *Spirocycathus*; and the third species, *Arch. minganensis*, which proves to be a siliceous sponge, was included in a new genus, *Archæoscyphia*.

Including the genera allied to *Archæocyathus*, described by Meek and Bornemann, the following constitute the family ARCHÆOCYATHINÆ, proposed by this last-named author; *Archæocyathus*, Bill.; *Ethmophyllum*, Meek; *Coscinocyathus*, Born.; *Anthomorpha*, Born.; *Protopharetra*, Born.; and *Spirocycathus*, g. n.

The genera of this family are characterized for the most part by turbinate or subcylindrical forms with stout walls enclosing an interior tubular or cup-shaped cavity. Their skeletons are of carbonate of lime in a minutely granular condition. The walls in the first four of the above-named genera consist of an outer and an inner lamina connected by vertical and radial septa; dissepiments are generally present between the septa; save in the genus *Anthomorpha*, the outer lamina of the wall is regularly and minutely perforate, and the inner lamina and septa are likewise cribriform; *Ethmophyllum* is particularly distinguished by oblique canals connecting the interspaces of the wall with the central cavity, *Coscinocyathus* by transverse, perforate tabulæ, and *Anthomorpha* by the apparently imperforate character of the surface-laminae and septa. *Protopharetra* and *Spirocycathus* are either non-septate or very obscurely septate; their skeleton consists of anastomosing laminae and fibres; in the latter genus the laminae are remarkably thickened by successive secondary deposits of calcareous material.

The Archæocyathinæ are regarded as a special family of the *Zoantharia sclerodermata*, in some features allied to the group of perforate corals. The family is restricted, so far as is known at present, to the lowest fossiliferous zone of the Cambrian strata, that characterized by the genus *Olenellus*, Hall, and it occurs at Anse-au-loup, Labrador; Troy, New York State; Nevada; in the Sierra Morena, Spain; and in the south-west of the Island of Sardinia.

The genus *Archæoscyphia*, based on *Archæocyathus minganensis*, Bill., is shown to be a lithistid sponge, and *Nipterella*, g. n., based on *Calathium* (?) *paradoxicum*, Bill., belongs likewise to the same group of sponges. The genera *Calathium*, Bill., and *Trichospongia*, Bill., are also undoubted siliceous sponges. These various sponges, which were either included in *Archæocyathus* by Mr. Billings, or regarded as allied thereto, have no relation whatever to the genus, or to any member of the family in which it is included. They come from a higher geological horizon, the Calciferous formation of the Canadian geologists, which is probably the summit of the Cambrian. They occur in the Mingan Islands and in Newfoundland. *Archæoscyphia* and *Calathium* are present in the Durness limestones.

January 23, 1889.—W. T. Blanford, LL.D., F.R.S.,
President, in the Chair.

The following communications were read:—

1. "On Remains of Eocene and Mesozoic Chelonia, and on a Tooth of (?) *Ornithopsis*." By R. Lydekker, Esq., B.A., F.G.S.

This communication treated in the first place of remains of Chelonia from the Cambridge Greensand, Wealden, and London Clay. Firstly, *Rhinochelys*, from the Cambridge Greensand, was considered to indicate a Pleurodiran type: and four new specific names were proposed, viz. *R. macrorhina*, *R. brachyrhina*, *R. Jessoni*, and *R. cantabrigiensis*. From the same deposits a skull was described which was considered to indicate a new species of *Chelone*, for which the name *C. Jessoni* was proposed. Other remains of marine Chelonians from these beds were regarded as indicating a Turtle allied to the Loggerhead, and were provisionally referred to the genus *Lytoloma*, as *L. cantabrigiense*. In the course of the description, it was proposed to replace the name *Euchastis* (preoccupied) by *Lytoloma*.

Of other Chelonidæ, the new generic name *Aryllochelys* was proposed for *Chelone cuniciceps*, Owen, of the London Clay, which would also include some other forms from the same beds.

A shell of a *Plesiochelys* from the Wealden of the Isle of Wight was regarded as indicating a new species, which was named *P. Brodiei*.

It was also shown that *Chelone gigans*, Owen, of the London Clay, did not belong to the Chelonidæ at all, but indicated a species of the genus *Psephophorus*—a member of the Dermatohelydidæ.

The next section of the paper described a peculiar mandibular symphysis from the London Clay, which was taken to indicate a new genus of Chelonia, to be named *Dacochelys*; and it was suggested that *Emys Delabechei*, Owen, might be the same form.

The paper concluded with a notice of a tooth from the Wealden, of the same general type as one previously referred by the author to *Ornithopsis*; and it was shown that teeth from the Portlandian of Boulogne, which had been described as *Neosodon* and *Caulodon*, and regarded as Iguanodont, were likewise of the same general type. It was also shown that *Cardiodon*, Owen, from the Forest Marble, belonged to the same group.

2. "On the Dentition of *Lepidotus maximus*, Wagn., as indicated by specimens from the Kimmeridge Clay of Shotover Hill, near Oxford." By R. Etheridge, Esq., F.R.S., F.G.S., and H. Willett, Esq., F.G.S.

The paper commenced with a list of fourteen species of *Lepidotus* known in England, from beds between the Lias and Upper Chalk inclusive, and an account of the range of the Lepidosteoid fishes from Permian times to the present day followed. The occurrence

of separate teeth of *Lepidotus maximus*, Wagn. (= *Spharodus gigas*, Ag.), in the *Ecogyra-virgula* zone of Shotover and Kimeridge has been previously recorded; but in the present communication four specimens of jaws containing teeth were noticed.

I. Comprises the upper dentition; it belongs to the same species and, possibly, to the same individual as No. IV. Eighteen teeth occur in its two fragments.

II. Contains two teeth, an upper and a lower, belonging to the same species as No. IV.

III. Probably the right dentary bone, appears to belong to a distinct species. It is very perfect, and exhibits sixteen teeth, of which the successors of six are exposed on the underside. The marginal series comprises the seven smallest teeth, those placed most inwardly being the largest. Compared with the dentary bone of those species of which that element is already known, the fossil approaches most closely to *Lepidotus maximus*, Wagn., but the bone is broader in proportion to its length, and the teeth are more numerous.

IV. Corresponds undoubtedly to *Lepidotus maximus*, Wagn. The dentition of this specimen does not, however, appear to belong to the left upper jaw, but to the dentary bone. Its upper surface contains seventeen teeth, and the lower, or successional, series consists of fifteen, = 32 in position.

MISCELLANEOUS.

New Trichopterygidae.

WHEN I wrote my paper on "New Trichopterygidae" (Ann. & Mag. Nat. Hist. March 1889, pp. 188-195) I supposed that the labels bearing the name "Blumenau," attached to all the specimens received from Herr E. Reitter, referred to their captor; but I have since discovered that they refer to the place in which he resided and not to the man himself.

In consequence of this mistake the following errata have occurred, viz. :—

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| P. 191, lines 5 & 6 from top, | for "made by Herr Blumenau in Brazil" read "from Blumenau in Brazil." |
| P. 191, line 22 | } for "by Herr Blumenau" read "near Blumenau." |
| P. 192, " 22 | |
| P. 193, " 12 | |
| P. 193, " 25 | |

A. MATTHEWS.

Gumley,
March 23, 1889.

On some new Entomophthoræ. By M. A. GIARD.

The species of Entomophthoræ are much more numerous than is generally supposed. During the last summer (1888) I observed some new forms, of which I may indicate the following, which will shortly be figured and described in more detail.